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10/560,065

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Oskar Axelsson

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GE HEALTHCARE, INC.

IP DEPARTMENT 101 CARNEGIE CENTER

PRINCETON, NJ 08540-6231

EXAMINER

SCHLIENTZ, LEAH H

ART UNIT

PAPER NUMBER

1618

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/560,065	Applicant(s) AXELSSON ET AL.	
	Examiner Leah Schlientz	Art Unit 1618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-61 is/are pending in the application.
- 4a) Of the above claim(s) 16,28-30,44-53 and 56 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15,17-27,31-43,54,55 and 57-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/21/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group 1 in the reply filed on 6/3/2009 is acknowledged. The election of polymer of acrylic acid monomers as species of coating layer is also acknowledged. The traversal is on the ground(s) that claim 1 has been amended to include that the coating passivates the reactive surface of the tungsten particle cores, and contends that amended claim 1 is believed to possess a "special technical feature." Applicant asserts that WO03/075961 mentions that "other materials could be considered for various reasons including cost, stability, or other factors" and that it is expected that coating other metal cores including e.g. tungsten, will provide tolerance results which are similar to the use of gold. Applicants have however found, see p. 2, line 34 to page 3, line 17 that the use of thioglucose used in WO03/075961 is not feasible for the passivation of more reactive particles such as those of tungsten. Furthermore, there is no basis in WO03/075961 for particles with a core having a tungsten content of 20 to 100 weight% of metallic tungsten and that a charged coating layer can be employed. Applicants therefore hold that the particles of claim 1 are novel over WO03/075961.

This is not found persuasive because WO03/075961 teaches additional coatings in addition to thioglucose, such as phospholipid, fatty acid. Such materials are within the scope of charged coatings, as claimed. See claims 8 and 14 of WO 03/075961.

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Therefore the particles of claim 1 do not possess a special technical feature, and the lack of unity requirement is still deemed proper and is therefore made FINAL.

Status of Claims

Claims 1-61 are pending, of which claims 44-53 are withdrawn from consideration at this time as being drawn to a non-elected invention. Claims 16, 28-30 and 56 are withdrawn as being drawn to non-elected species. Claims 1-15, 17-27, 31-43, 54, 55 and 57-61 are readable upon the elected invention and are examined herein on the merits for patentability.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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Claims 1-15, 17-27, 31-43, 54, 55 and 57-61 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over the claims of copending Application No. 11/913,079. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to particles having a core comprising tungsten and a coating, including charged polymeric coating.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-15, 17-27, 31-43, 54, 55 and 57-61 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over the claims of copending Application No. 11/627,529. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to particles having a core comprising tungsten and a coating, including e.g. charged polymeric coating.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Objections

Claim 6 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper

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dependent form, or rewrite the claim(s) in independent form. The claim includes the limitation that the core of the particle has a tungsten content of 20 to 100 weight % of metallic tungsten. However, independent claim 1 already recites such limitation, therefore the claim fails to further limit.

Claim 12 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claim includes the limitation that the coating layer comprises a charged coating layer. However, independent claim 1 already recites such limitation, therefore the claim fails to further limit.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-15, 17-21, 31, 35, 47-43, 54, 55 and 57-61 are rejected under 35 U.S.C. 102(b) as being anticipated by Hainfeld (WO 03/075961).

Hainfeld discloses metal nanoparticles useful for contrasting the radiation of x-rays (abstract). Particle diameter includes 0.5 to 500 nm, including 1.4 to 2 nm (claims

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3-5). Each metal nanoparticle has a non-metallic surface layer surrounding each metal core (claim 6). Core may be composed of tungsten (claim 7). The core may have a surface layer including fatty acid, phospholipid (i.e. charged) (claim 14). Regarding instant claim 11, mixtures of metals may be found in the core (e.g. iridium, see page 16). Regarding claims 17-21, it is interpreted absent evidence to the contrary that there would be at least 4, 8 fatty acid or phospholipid molecules present on the surface of the nanoparticles having the size disclosed in Hainfeld, since Hainfeld describes their presence as a "layer." Regarding the limitation of the instant claims wherein the charged coating layer is "to passivate the reactive surface of the tungsten particle," the intended use of the coating layer is not given patentable weight to distinguish over Hainfeld because the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Since Hainfeld discloses compositions that meet the structural limitations of the instant claims, they would be capable of performing the intended use.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-8, 12-15, 17-27, 31-43, 54, 55 and 57-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fahlvik (6,207,134) in view of Lewis (5,314,679).

Fahlvik discloses particulate contrast agents, especially contrast agents for MR imaging having a metal oxide core which is preferably superparamagnetic iron oxide. The particulate contrast agents are provided with a low coating density of a polyelectrolyte coating agent selected from structural polysaccharides and synthetic polymers, especially polyaminoacids (abstract). The contrast agents include polyelectrolyte coated metal oxide contrast agent particles for use in MR, X-ray, EIT and magnetometric studies, especially where such metal oxide particles exhibit superparamagnetic behaviour (column 2, lines 10-20). Diagnostic agents comprising a composite particulate material are disclosed, the particles whereof comprise a diagnostically effective, substantially water-insoluble, metal oxide crystalline material and a polyionic coating agent, wherein said particles have a size of below 300 nm, said crystalline material has a crystal size of from 1 to 100 nm, the weight ratio of said crystalline material to said coating agent is in the range 1000:1 to 11:1, and said coating

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agent is selected from the group consisting of natural and synthetic structural-type polysaccharides, synthetic polyaminoacids, physiologically tolerable synthetic polymers and derivatives thereof. Particularly preferred as the polyionic polysaccharides coating agents are the natural and synthetic heparinoid polysaccharides, such as heparins, chondroitins (e.g. chondroitin-4-sulphate), and the marine polysaccharides alginates, carrageenans and chitosans. Less preferably, synthetic polyionic polymers, eg polyaminoacids, polyacrylates, and polystyrenesulphonates may be used as coating agents. Among the polyaminoacids homo and copolymers of lysine, glutamic acid and aspartic acid and their esters (eg methyl and ethyl esters) are preferred. In general, the coating agent should contain a multiplicity of ionic groups, e.g. amine, carboxy, sulphate, sulphonate, phosphonate or phosphate groups, spaced along the polymer to allow multiple points of attachment to the metal oxide crystal surface as well as to provide the composite particle as a whole with a net electrical charge, preferably negative, which is measurable as a zeta potential. The multiple attachment ensures a firm autoclave-resistant binding and storage stability while the net charge assists in enhancing the biotolerability of the particle following administration into the vasculature. As a result of its polyionic nature, the coating agent gives the composite particles an overall electrical charge, detectable as a non-zero zeta potential (column 2-3). A wide variety of metal oxide nanoparticles are known and may be employed, iron oxide is preferred (column 4, lines 30+). See Example 22, showing iron oxide nanoparticles including poly(acrylic acid coating).

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Fahlvik does not specifically recite tungsten oxide particles. It is for this reason that Lewis is joined.

Lewis discloses magnetic resonance imaging contrast agents including superparamagnetic metal oxide crystals, wherein oxides include iron, chromium, cobalt, copper, manganese, molybdenum, nickel and tungsten oxides (claims 6-8).

It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute tungsten oxide as a functionally equivalent magnetic metal oxide for iron oxide in the compositions of Fahlvik. The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, 82 USPQ2d 1385, 1395-97 (2007) identified a number of rationales to support a conclusion of obviousness which are consistent with the proper "functional approach" to the determination of obviousness as laid down in *Graham*. One such rationale includes the simple substitution of one known element for another to obtain predictable results. The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. See MPEP 2143. In the instant case, the substituted components (tungsten oxide and iron oxide) and their functions (superparamagnetic metal oxide nanoparticles for use in magnetic resonance imaging) were known in the art at the time of the instant invention. For example, Lewis teaches iron oxide and tungsten oxide nanoparticles as MRI contrast agents. One of ordinary skill in the art could have substituted one known metal oxide for another, and the results of the substitution would have been predictable, that is a magnetic metal oxide nanoparticle having a charged coating for use in MRI. Regarding claims 1-8, tungsten oxide is interpreted to be WO

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(i.e. 92% by weight metallic tungsten). Regarding claims 41 and 43, Fahlvik teaches x-ray imaging. Regarding the limitation of the instant claims wherein the charged coating layer is "to passivate the reactive surface of the tungsten particle," the intended use of the coating layer is not given patentable weight to distinguish over Fahlvik in view of Lewis because the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Furthermore, Fahlvik teaches that the coatings are to improve biotolerability of his particles.

Conclusion

No claims are allowed at this time.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leah Schlientz whose telephone number is 571-272-9928. The examiner can normally be reached on Monday - Friday 8 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Hartley can be reached on 571-272-0616. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LHS

/Sharmila Gollamudi Landau/
Supervisory Patent Examiner, Art Unit 1611